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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/659,715	09/11/2003	Doug Van Den Broeke	55071-283	4766
7590 10/05/2005				
MCDERMOTT, WILL & EMERY 600 13th Street, N.W. Washington, DC 20005-3096		EXAMINER LU, TONY W		
		ART UNIT PAPER NUMBER		
		2878		
DATE MAILED: 10/05/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/659,715	<b>Applicant(s)</b> BROEKE ET AL.	
	<b>Examiner</b> Tony Lu	<b>Art Unit</b> 2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>05/17/04, 09/06/05</u> . | 6) <input type="checkbox"/> Other: ____  |

## **DETAILED ACTION**

### ***Claim Objections***

Claims 2,6,7,9,12,13,15 and 18 are objected to because of the following informalities:

As for claim 2, the antecedent basis for "said a wafer" is unclear.

As for claim 6, the antecedent basis for "said second region", "said third region", "the chromless components" and "the chrome components" are unclear.

As for claim 7, the phrase "An apparatus for generating masks for printing a pattern comprising a plurality of features having varying critical dimensions, said method comprising the steps of" should be "An apparatus for generating masks for printing a pattern comprising a plurality of features having varying critical dimensions comprising".

As for claim 9, the antecedent basis for "said a wafer" is unclear.

As for claim 12, the antecedent basis for "said second region", "said third region", "the chromless components" and "the chrome components" are unclear.

As for claim 13, the antecedent basis for "the computer" is unclear.

As for claim 15, the antecedent basis for "said a wafer" is unclear.

As for claim 18, the antecedent basis for "said second region", "said third region", "the chromless components" and "the chrome components" are unclear.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

Claims 1,7 and 13 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The phrase "modifying said mask pattern for each feature categorized into a predefined distinct zone of said plurality of distinct zones" is unclear, further explanations are required in the specification.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1,2,7,8,13 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Wu et al US6605481.

With respect to claims 7 and 13, Wu et al disclose a method and/or an apparatus and/or a computer program product for generating masks for printing a pattern comprising a plurality of features having varying critical dimensions comprising: means(400) for obtaining data representing said pattern; means(410) for defining a plurality of distinct zones based on the critical dimensions of said plurality of features;

means(420) for categorizing each of said features into one of said plurality of distinct zones; and means(460) for modifying said mask pattern for each feature categorized into a predefined distinct zone of said plurality of distinct zones( note that the above means are a computer program product and/or instructions that can be used by a computer system).

With respect to claims 8 and 14, per the above discussion, Wu et al disclose a first zone in which features having a critical dimension less than or equal to a first predetermined amount can be imaged utilizing chromeless phase lithography techniques; a second zone in which features having a critical dimension greater than said first predetermined amount and less than a second predetermined amount can be imaged utilizing a combination of chromeless phase lithography techniques and chrome; and a third zone in which features having a critical dimensions greater than said second predetermined amount can be imaged utilizing chrome(read col.4-5 and 7).

### ***Claim Rejections - 35 USC § 103***

Claims 3,4,5,9,10,11 and 15-17are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu et al US6605481.

With respect to claims 3,4,9,10,15 and 16, per the above discussion, Wu et al fail to teach at least one of said features in said first zone is implemented in said mask as adjacent phase edges etched in a wafer.

Although Wu et al lack a clear teaching of at least one of said features in said first zone is implemented in said mask as adjacent phase edges etched in a wafer, the

use of adjacent phase edges is known and obvious to one of ordinary skill in the art in order to form a feature with an accurate critical dimension.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wu et al accordingly in order to provide more control to the critical dimension. The further citations regarding chrome patches disposed on an upper surface of said substrate remaining between said adjacent phase edges in claims 10 and 16 would have been obvious for similar reasons set forth above.

With respect to claims 5, 11 and 17, per the above discussion, Wu et al fail to teach said chrome patches operate to control the percentage transmission of a light source incident on said mask. The use of a known and available chrome patch to control the light transmission of a mask would have been inherently included, however, if not, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Wu et al accordingly in order to provide more control to the light transmission of the mask.

With respect to claims 6, 12 and 18, per the above discussion, Wu et al fail to teach compiling the features contained in said first zone, and chromeless phase components of the features contained in said second zone, generating a first mask for imaging the chromeless phase components contained in said first zone and said second zone; and compiling chrome components of the features contained in said second zone, and the chrome components of the features contained in said third zone, generating a second mask for imaging the chrome components contained in said second zone and said third zone.

Although Wu et al fail to teach aforementioned generation of masks, separating chrome and chromless phase components of the features and forming a chrome and a chromeless mask respectively would enable the chrome mask to prevent the creation of undesirable artifact regions that would be created by the chromless shift mask.


It would have been obvious to one of ordinary skill at in art at time of the invention to modify Wu et al accordingly in order to provide a better lithography results.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tony Lu whose telephone number is 5712728448. The examiner can normally be reached on M-F 9:00am- 6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on 5712722444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
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